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Characterization of Perceptions Toward Diabetes Mellitus and Self-Care Practice Among Diabetes Mellitus Patients Visiting Jimma University Medical Center:ApplicationofExtended Parallel Process Model

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ABSTRACT

Background: Self-care behaviors reduce complications and improve quality of life among diabetic patients. Researches are limited on how patients' access, process, and respond to diabetic self-care messages in Ethiopia.

Objective: To determine response to self-care practice message among diabetic patient in Jimma University Medical center based on the Extended Parallel Process Model

Methods: A facility-based cross-sectional study was conducted among diabetic patients in Jimma University Medical centerfromApril 12- May 25, 2020. Data was collected using a structured questionnaire developed based on the constructs of the Extended Parallel Process Model and by reviewing literatures. Data were entered using Epi data version 3.1 then analyzed using SPSS version 23. Frequency, proportions, and summative scores were calculated as descriptive statistics. Analysis of variance and independent sample t-test was done to test differences in perceptions (perceived threat and perceived efficacy) by sociodemographic variables and to see self-care practice differences by threat/efficacy interaction. Multivariable logistic regression was performed and a p-value of less than 0.05 and odds ratio was used to show the degree of association between the independent and the outcome variable.

Result:in this study the prevalence of controlling the danger of diabetes was 49.6%. 21.3%of the respondents were responsive, 17.8% belong to fear control, 23.3%were proactive and37.6% were no response respondents. Those who completed higher education scored high in both perceived threat and efficacy score compared to those who cannot read and write. Responsive respondents scored high in self-care practice score as compared to other respondents. educational status, information sources, knowledge, and preferred message appeals were independent predictors of controlling the danger of diabetes.

Conclusion and recommendation: There is a significant gap in controlling the danger of diabetes.Variables like the level of education, knowledge of diabetes mellitus, information sources, and message appeals were independent predictors of controlling the danger of diabetes. designingmessage having higher efficacy while maintaining the level of threat is the best that fits the existing audience's message processing to bring about desired diabetic self-care Practice

Keywords: diabetes, self-care message, response, extended parallel process model, Ethiopia

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List of abbreviation

AOR	Adjusted Odds Ratio
COR	Crude Odds Ratio
CI	Confidence Interval
DM	Diabetes Mellitus
EPPM	Extended Parallel Process Model
FPG	Fasting Plasma Glucose
HBA1C	Hemoglobin A1C
IDF	International Diabetes Federation
JUMC	Jimma University Medical Center
LMIC	Low And Middle Income Countries
NGO	Non-Governmental organization
SDSCA	Summary of Diabetes Self Care Activities
SPSS	Statistical Package For Social Science

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Diabetes mellitus (DM) is a serious chronic medical condition that occurs when the body cannot produce a hormone called insulin or cannot use the produced hormone due to insulin resistance which leads to raised levels of glucose in the blood (1)

According to the American Diabetes Association DM is classified as Type 1 diabetes, Type 2 diabetes, Gestational DM, and DM due to other causes. Globally, the commonest one is Type 2 diabetes. Initially, it occurs due to a situation called insulin resistance which is characterized by the inability of body cells to fully respond to insulin that leads to hyperglycemia(1,2)

Behaviors undertaken by people with or at risk of diabetes to successfully manage the disease on their own is known as self-care practices which include four main domains: sustaining appropriate dietary practice, engaging in regular physical exercise and self-monitoring of blood glucose levels and foot care (3,4)

The American Association of Diabetes Educators proposes healthy eating, physical activity, monitoring blood glucose, compliance with medication, and healthy coping skills as elements of self-care behaviors for people with diabetes(2).Self-care behavior is associated with good glycemic control with a mean of HbA1c level changed from 8.3% to 7.3% reduction of complications and improvement in the quality of life(5,6).

Communication is important in influencing perception, belief, and attitude, behavior, and maintain changed behavior(7). The EPPM is a model of persuasive communication that posits a mechanism responsible for the effectiveness of a particular class of persuasive messages referred to as fear (8).

When communicating a health threat to patients, care must be taken to ensure that fear aroused by the message is channeled in the proper direction. Strongly worded high efficacy statements are more likely to promote compliant behaviors and avoid fear control processes than ambiguously worded factual statements(9).

1.2 Statement of the Problem

Globally, diabetes is one of the top 10 causes of death.The most recent IDF atlas 2019 points worldwide there are 351.7 million people of working age (20–64 years) with diagnosed or undiagnosed diabetes in 2019. In Africa alone, 19.4 million people are living with diabetes(1,10). In Ethiopia, the magnitude of diabetes is increasing; according to the WHO report, the number of cases was 800 000 in 2000 and is rising to an estimated 1.8 million by 2030 (11–13).

People living with diabetes are at risk of developing complications like heart attack, stroke, kidney failure, leg amputation, and vision loss and nerve damage.It has been estimated that the direct annual cost of diabetes to the world is more than US$ 827 billion(2,10). The increase in health expenditure is expected to continue. LMIC will carry a larger proportion of this future global health-care expenditure burden than high-income countries (10)

Despite the benefits of self-care practice in reducing diabetes complications and improvement of lifestyle, studies done in both developed and developing countries showed poor self-care practice. One reason for this may be problems of communication which is important in influencing perception, attitude intention, and behavior change (14–19)

It is promising that there are different international recommendations, national guidelines, and communication efforts in promoting self-care behavior. However, their development most often focuses solely on its ability to influence knowledge, attitudes, andbehaviors, while not focusing on the persuasiveness of the message conveyed (9).

The EPPM is one of persuasive communication model which helps to see the effect of message processing in developing realistic risk perceptions and actionable information about how to reduce risk (8).

Even though studies are conducted in identifying communication efforts and persuasiveness of the message conveyed to the targeted individuals in different parts of the world little is known on how patients' access, process, and responds to diabetic self-care messages in Ethiopia. Therefore, this study fills these gaps by assessing response to self-care message among Diabetic Patient in Jimma University Medical Center Based on EPPM.

CHAPTER TWO: LITERATURE REVIEW

Theories of health behavior such as the Health Belief Model (HBM), the Theory of Reasoned Action/Theory of Planned Behavior (TRA/TPB), the Transtheoretical Model (TTM) and Social Cognitive Theory (SCT) have been used to predict, explain, or attempt to change a wide variety of individual health behaviors(20–23).

Elements of the popular health behavior models/theories mentioned above overlap considerably, although none account for a patient's emotional response (fear) to a health threat and the potentially negative consequences(24).

Although parallel process model (PPM), protection motivation theory (PMT), and extended parallel process model (EPPM) are fear appeal models, the PMT model does not specify when and why people reject message recommendations and the PPM offers the distinction between generative cognitive and emotional reactions but fails to distinguish when one would dominate the other. However, EPPM is a model that addresses the fear naturally induced by health threats to promote cognitive processing and positive behavioral change and is useful in guiding the development and testing of the effectiveness of health messages. Also, it offers 12 specific propositions under which fear appeals messages succeed and fail(25).

The EPPM has been successfully applied in a variety of public health contexts such as Health promotion, breast self-exams, evaluation of the effectiveness of brochures to reduce the risk for noise-induced hearing loss, evaluation of condom message in HIV prevention (26–29).

2.1 Theoretical Framework: The EPPM

2.1.1 Assumptions of the EPPM

The assumptions of EPPM includeadditive relationship between severity andsusceptibilityandbetween response- and self-efficacy, the role of time, and theassumption that people are not aware of the threat prior toexposure to fear appeal messages.

2.1.2 Assumption of an Additive Relationship

Two central concepts of the EPPM, perceived threat andperceivedefficacy,arecomprised of two underlying dimensions each. Thosedimensionsareassumed to combine in an additive mannerto produce the overall index of threat or efficacy(32,34).

2.1.3 Disregard for Previous Emotions and Cognitions About the Issue

By focusing on fear message processing, the EPPM assumesthat audiences are not aware of either the threat or the effective responses prior to message exposure(43). The theory alludes to previousemotions and cognitions by including them in "individualdifferences" that affect message processing, but it does notspecify how preexisting fear or knowledge about threat orefficacy might interact with the message.

2.1.4 The Issue of Thresholds and the Role of Time in the Model

The EPPM assumes that individuals take time appraising threat and efficacy. These appraisals are assumed to happen in a continuous manner, and once the levels of perceived threat or efficacy reach certain thresholds (critical points), subsequent processes are triggered(34).

The main EPPM variables are fear, threat, and efficacy. Threat constitutes severity and susceptibility while efficacy constitutes response-efficacy and self-efficacy(30,31).

Fear: Internal negative emotional reaction comprisingpsychological and physiological dimensions elicitedby a serious and personally relevant threat(30,31).

Threat:is both a component of messagedesign and measured as a perception. The perceived threat arises when an individual perceives seriousharm that he or she is likely to experience. The threat is comprised of twosub-dimensions: severity and susceptibility ("Perceived severity" refers to an individual'sbelief that the threat could cause serious harm to my health, whereas "perceived susceptibility" refers to an individual's belief that thethreat is likely to cause harm) (30,31).

Efficacy is another key EPPM variable that is both a component ofmessage design and measured as a perception. Efficacy is an individual'sbelief that a recommended behavior is effective in averting a threat and is feasible andeasy to carry out. Efficacy is comprised of two sub-

dimensions: self-efficacy and response-efficacy ("Perceived self-efficacy" refers to an individual's belief that he or she is able to carry out the recommended response. To have self-efficacy, an individual must not only haveskills but also have confidence or belief in having those skills. "Perceivedresponse efficacy" is an individuals' belief that the recommended response will effectivelyavert a threat) (8,32,33).

The first step in applying the EPPM is to present a threat of a hazard (a message) to the target population. When presented with a health risk, people first think about whether it is relevant to them and whether the threat is significant. If the threat is believed to be irrelevant and/or trivial; people do not process any further information about the threat. They just ignore it and don't respond to the risk message. In contrast, if people appraise the threat and believe they are vulnerable to it and/or it could lead to serious harm, then they become fearful and motivated to act. At this point, people appraise the efficacy of the recommended response(25).

Depending on the level of efficacy appraised, people perform one of two responses, either a danger control or a fear control response. If individuals believe they can perform the recommended response and they believe the recommended response works in averting the threat they engage in danger control response. A health risk message is seen as successful when people control the danger because people are making changes in attitude, intention, and behavior in line with the message's recommendations. If individuals doubt their ability to perform the recommended response and/or they doubt whether the recommended response averts the threat, they engage in fear control response and individuals usually use psychological defense strategies to control their fears, such as defensive avoidance, denial, or reactance (8,34–36).

A meta-analysis of the fear appeal literature indicated that the stronger the message component the stronger the favorable attitude, intention, and behavior toward the recommended response and statistically significant pattern of means HTHE > HTLE = LTHE > LTLE was observed. The stronger the threat, the stronger the fear control response.the weaker the efficacy, the greater the fear control response, and fear control responses were negatively correlated with danger control responses (37).

Application of EPPM in the context of primary care physicians' testing their patients for kidney disease showed that the behavioral intention measures on the initial survey, the high threat/high efficacy group had the highest mean HTLE=LTHE but higher than LTLE. For the behavior measures on the initial survey showed that the high threat=high efficacy group had the highest mean, while the other three groups had means that were equal to each other, but lower than the high threat=high efficacy mean. For both the behavioral intention and behavior measures on the follow-up survey, the high threat=high efficacy group had the highest mean, while the other three groups had means that were equal to each other (38).

A study conducted in Midwestern university students to inform them about the symptoms and dangers of meningitis using EPPM showed that after exposure to high-efficacy/no threat message about meningitis, those participants who initially held fear control responses moved toward danger control processes. Similarly, after exposure to high threat /no efficacy message, those participants who initially held fear control responses moved further in to fear control processes. However, after exposure to a high-threat/no efficacy message, those participants who initially held danger control responses moved toward fear control processes (39).

A study done using RBD to understand Australian Aboriginal smoking showed no significant associations regarding the intention to quit smoking, home smoking bans, and protection responses in quadrant IV participants but unexpectedly demonstrated high fear control responses (denial, avoidance, etc.). Quadrant I smokers gave the strongest indication of danger control dominance and quadrant II smokers implied fear control, but without direct evidence of high fear control responses, quadrant III participants demonstrated a lower level of danger control (40).

A study done to Reduce meat consumption in the American population using EPPM showed that the HTHE and HTLE messages were equally persuasive and resulted in greater message acceptance (attitude change, behavioral intention, behavior) than the control group(41).

A study done using the EPPM to Develop Print Materials for Communicating Cardiovascular Disease Risks in England showed that Attitudes, intentions, and behaviors toward vitamins were all higher in the high-efficacy message group than in the low-efficacy group and measures of defensive avoidance and issue derogation were marginally higher in the low efficacy message group than in the high-efficacy group (42).

2.2 Prevalence of Diabetic Self-Care

A cross sectional studies conducted in Myanmar and Ardakan city of Iran showed that 69.2% and 53% of patients had poor self-care practice(44,45). Studies conducted in different parts of Ethiopia showed that prevalence range of poor diabetes self-care from 23.2% to as high as 61.6%(14–17,19,46–48)

Number of studies have been reviewed in this research, these studies examined persuasiveness of the message conveyed to the targeted individuals in different parts of the world for different behaviors but little is known on how patients' access, process, and responds to diabetes self-care messages in Ethiopia.

2.3 Conceptual Framework

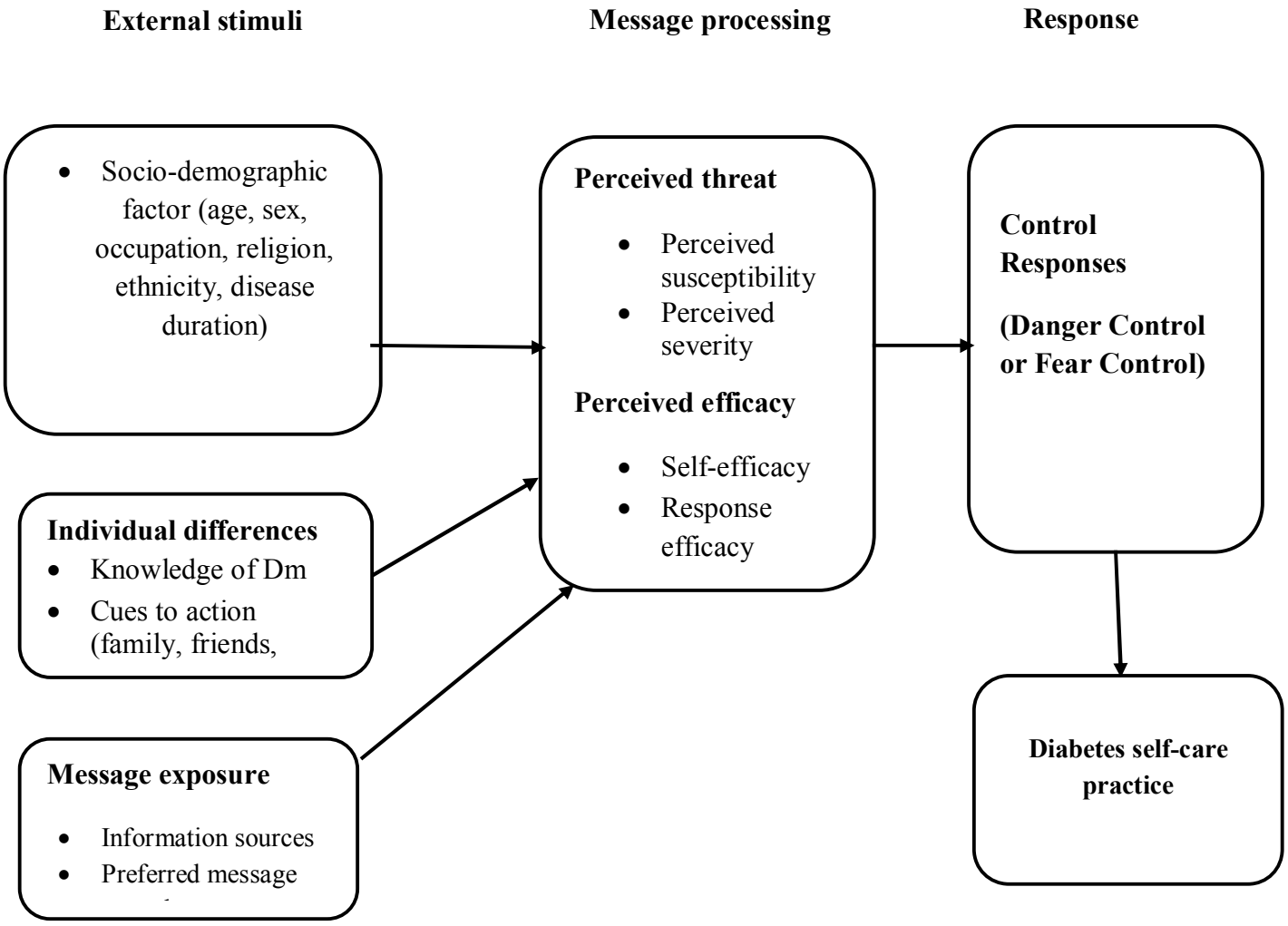

Figure 1: Conceptual framework adapted from Witte 1994 for characterization of perceptions toward diabetes mellitus and self-care practice among diabetes mellitus patients visiting Jimma University Medical Center Ethiopia, April 12- May 25, 2020

2.4 Significance of the Study

The finding of this study can help as an input in designing theory-based appropriate and effective self-care messages based on the response category of diabetes patients that will fit the audience specific need. Academicians and researchers can use the findings for the expansion of knowledge and improvement of self-care practice in the field of public health. Besides, it helps provide information as a baseline for future studies.

CHAPTER THREE: OBJECTIVE

3.1 General Objective

- To determine response to self-care message among diabetic patient in JUMC based on the Extended Parallel Process Model, 2020

3.2. Specific Objective

- To determine self-care message response among diabetes patient
- To describe perceived threat of diabetes patient
- To describe perceived efficacy of diabetes patient
- To analyze predictors of response to diabetes self-care message
- To assess the association between response to message and diabetes self-care practice

CHAPTER FOUR: METHODS AND MATERIALS

4.1 Study Area and Study Period

The study was conducted in Jimma University Medical Center, found in Jimma town which is located in the Oromia region, Southwest Ethiopia, at 343 Km from Addis Ababa, the capital city of Ethiopia. The total numbers of registered diabetes patients on follow-up are 3578 in JUMC. Health information on diabetes is given at OPD level to an individual patient and there is no Health Promotion Expert in the chronic ward. They get information from television and radio (Jimma 102.0 FM and others).

The study was conducted from April 12 to May 25, 2020.

4.2 Study Design

- The facility-based cross-sectional study design was carried out from April 12 to May 25, 2020.

4.3 Population

4.3.1. Source Population

- All diabetic patients that are 18 years and above and attending follow up at diabetes mellitus clinics in JUMC.

4.3.2 Study Population

- Selected diabetes mellitus patients were 18 years and above who visited JUMC during the study period.

4.4 Eligibility Criteria

4.4.1 Inclusion Criteria

- All diabetic patients who were 18 years and above and who were on follow up and registered

4.4.2 Exclusion criteria

- Gestational DM

4.5 Sample Size Determination and Sampling Technique

4.5.1 Sample Size Determination

- The sample size was determined using a single population proportion formula based on the following assumptions

$$n = \frac{(z_{\alpha/2})^2(pq)}{W^2}$$

Where;

n= the minimum sample size

P: the proportion of controlling danger of diabetes, because there was no study conducted in the related topic in the study area to the understanding of investigators. Expected prevalence of 50 % (0.5) was used to make the sample size maximum

D: marginal error of 5% was used**.**

Z α/2: standard normal score at a 95% confidence interval.

Therefore, the minimum sample size was 384. Total diabetic patients who had been attending the follow-up clinic in JUMC were 3578 since the source populations were less than 10,000 the sample size was adjusted with the following correction formula i.e.

$$N_f = n/(1+n/N)$$

$$=384/(1+384/3578)$$

$$=346$$

Considering a 5% non-response rate, the required total sample size was **365.**

4.5.2 Sampling Technique

The sampling technique was systematic random sampling. The data was collected from JUMC with the total diabetes patient follow up of 3578. The flow of patients in JUMC hospitals is 120 patients per week, in each week there are two follow up days Monday and Tuesday, in each day an estimated average number of 60 patients are visited.to calculate the sampling fraction total number of patient follow up in forty-five days was divided by the sample size which gives a sampling fraction of two, So Every two patients were selected using a systematic random sampling technique until the required sample size was fulfilled.

4.6 Variables

4.6.1 Dependent Variables

- Message response of respondents (danger control, fear control response)
- Diabetes self-care practice

4.6.2 Intermediate variables

- Perceived threat (Perceived susceptibility and Perceived severity of diabetes complications)
- Perceived efficacy (perceived response efficacy and Self-efficacy of recommended self-care practice)

4.6.3 Independent variables

- Socio-demographic characteristics (age, sex, marital status, education, religion, occupation, income)
- Cues to action (media, friends. Family members)
- Knowledge about diabetes mellitus
- Message exposure

4.7 Operational definition and Measurement

Perceived threat: Cognitions about danger or harm that exists in an environment. Perceived threat comprises two underlying dimensions: perceived severity and perceived susceptibility(32,34). The score of weighted perceived susceptibility and perceived severity was

summed up and divided by two to form the score of weighted perceived threat, with a response ranging from 0-100 and the score wastreated as a continuous variable.

Perceived severity: Beliefs about the significance or magnitude of the diabetes complication(32,34). It was measured with 4 items adopted from the RBD scale using a five-point Likert scale from strongly agree=5, agree=4, neutral=3, disagree=2, and strongly disagree=1. The response wassummed up and standardized with a response ranging from 0-100 and the score wastreated as a continuous variable.

Perceived susceptibility: Beliefs about one's risk of experiencing diabetes complication(32,34). It was measured using 4 items adopted from the RBD scale using five points Likert scale from strongly agree=5, agree=4, neutral=3, disagree=2, and strongly disagree=1. The response wassummed up and standardized with a response ranging from 0-100 and the score wastreated as a continuous variable.

Perceived efficacy: it is Cognitions about effectiveness, feasibility, and ease with which the recommended response impedes or averts a threat. It contains two underlying dimensions: response efficacy and self-efficacy(32,34).
A weighted score of perceived self-efficacy and perceived response efficacy was summed up and divided by two to form a score of weighted perceived efficacy, with a response ranging from 0-100 and the score wastreated as a continuous variable.

Perceived Self-efficacy: Beliefs about one's ability to perform the diabetes self-care to avert the diabetes complication(32,34). it was measured using 4 items adopted from the RBD scale using five points Likert scale from strongly agree=5, agree=4, neutral=3, disagree=2, and strongly disagree=1. The response wassummed up and standardized with a response ranging from 0-100 and the score wastreated as a continuous variable.

Perceived Response efficacy Beliefs about the effectiveness of the diabetes self-care in deterring or avoiding the diabetes complication (32,34).it was measured using 4 items adopted from the RBD scale using five points Likert scale from strongly agree=5, agree=4, neutral=3, disagree=2 and strongly disagree=1. The response was summed up and standardized.

theweighted perceived response-efficacy score was treated as a continuous variable

Message exposure:this tool was adopted from previously published research on other behavior contextualized to fit into this study(29). It was measured using six items including a preferred source of information, preferred channels, and frequently heard the message, preferred message appeals

Cues to action: are strategies to activate readiness includes events, people, or things that move people to change their behavior(47).this tool adapted from previously published research on breast self-examination contextualized to fit into this study(49). It was measured using four items with yes or no response. The score was summed up and was treated as a continuous variable

Knowledge about diabetes: this tool was adopted from previously published research on diabetes self-care (47). It was measured using seventeen items with a yes and no response which was summed up and weighted with a response ranging from 0-100 and the score wastreated as a continuous variable.

Critical value (discriminating value): obtained by subtracting weighted perceived threat score from weighted perceived efficacy score. (33).

Danger control responses it is a self-protective motivation. It includes Belief, attitude, intention, and behavior changes(diabetes self-care) under a message's recommendations (32,34).

When the critical value is positive the individual is in danger control response(25).

Fear control Responses: It is a defensive motivation.Coping responses that diminish fear such as defensive avoidance, denial, and reactance (including issue and message derogation and perceived manipulative intent)(32,34).when the critical value is ≤ 0 an individual is in fear control response(25).

Diabetes self-care: validated Summary of Diabetes Self-Care Activities (SDSCA) questionnaire was used to measure diabetic self-care practice. The questionnaire comprises of 10 items with four sub-scale domains. The four sub-scale domains include diet, physical activity, blood glucose testing, and foot-care. The SDSCA measures the frequency of performing diabetes self-care activities in the last 7 days. Response choices range from 0 to 7. The mean score of diabetic self-care was calculated and those who scored above the mean were categorized as having good diabetes self-care practice(50).

Defensive avoidance: this tool was adopted from previously published research on other contexts (51).it was measured using 4 items with a five-point Likertscalefrom strongly agree=5, agree=4, neutral=3, disagree=2, and strongly disagree=1. The response was summed up and standardized. the weighted score was treated as a continuous variable

Quadrant I: (responsive respondents): - People taking protective action against health threat (diabetes complication) (52).These are respondents who scored above the median for both perceived efficacy and threat i.e these are people having high efficacy and high threat

Quadrant II:(Fear Control respondents):-People in denial about health threat (diabetes complication), reacting against it(52).These are respondents who scored below the median for perceived efficacy and above the median, for perceived threat i.e these are people having low efficacy and high threat

Quadrant III:(proactive respondents):-Lesser Amount of Danger Control:-People taking some protective action, but not really motivated to do much(52).These are respondents who scored above the median for perceived efficacy and below-median for perceived threat i.e these are people having high efficacy and low threat

Quadrant IV:(No Response respondents):-People not considering the threat (diabetes complication) to be real or relevant to them; often not even aware of threat (52).These are respondents who scored below the median for both perceived efficacy and threat i.e these are people having low efficacy and low threat

4.8 Data Collection Tools and Procedures

Data was collected by face to face interview using a structured questionnaire which was developed based on constructs of EPPM and by reviewing different literatures. The data collection tools initially were prepared in English and translated to Amharic and Afan Oromo. The dependent variable was the Message response categories of respondents (danger control as a variable of interest). The independent variables were Socio-demographic characteristics (age, sex, marital status, education, ethnicity, occupation, income), Perceived susceptibility to diabetes complications, perceived severity of diabetes and related complications, response efficacy of taking the recommended self-care practice, Self-efficacy to follow recommended self-care practice, Cues to action (media, family, friends), message exposure and recall, and Knowledge about diabetes mellitus. Data was collected at diabetes follow up clinic by 4 diploma nurses and supervised by two Bsc nurses.

4.9 Data Quality Assurance

Before data collection, the questionnaire was translated by language experts from the English version to Amharic language and Afan Oromo language and back-translated to the English language by different experts to keep the consistency of the questionnaire. Two-days training was given before actual data collection by the principal investigator to supervisors and data collectors about the objective of the study, how to supervise and collect the interview questionnaire respectively.

The instrument was pretested on 5% of the actual sample in Seka hospital with similar socioeconomic status with the study population before actual data collection and correction were taken accordingly. During data collection, a questionnaire was checked for completeness daily by data collectors and supervisors.

4.10 Data Processing and Analysis

After the data collection, data were checked manually for its completeness every day. The responses in the completed questionnaire were coded and entered into Epi-data version 3.1 and exported to statistical package for social science (SPSS) window 23 for analysis by a principal investigator, further data cleaning (editing, recoding, checking for missing values and outliers) was made after exported to SPSS.

Descriptive statistics were used to describe the variables, and then the results were expressed as frequency, percentage, mean and standard deviation, before further analysis normality curve, and tests of homogeneity of variances were checked, the presence of Multi-collinearity was checked for independent variables using Variance inflation factor and there were no variable which were multicollinear with maximum VIF of 1.46and Model fitness was checked by Hosmer and Lemeshow goodness of fit test with a chi-square of 13.97 and p value of 0.083.Independent sample t-test and analysis of variance (ANOVA) were done to test differences in perceptions (perceived threat and perceived efficacy) by sociodemographic variables, knowledge, and diabetes self-care practice difference by quadrants (threat/efficacy interaction). A bi-variable logistic regression model was used for each explanatory variable to identify candidate variables with a P-value < 0.25. Multivariable logistic regression analysis was performed and a p-value of less than 0.05 was taken as statistically significant. Odds ratio with its 95% CI was used to show the degree of association between the independent and response categories of respondents.

4.11 Ethical Consideration

Ethical clearance was obtained from the Research and Ethics Committee of Jimma University Institute of Health Ethics Review Board. The necessary permission was obtained from JUMC. Informed written consent was obtained from the study participants after explaining the purpose of the study. Data was kept confidential and anonymous and it was used only for research purposes. The participants were also informed that they are not forced to answer the entire question and they can withdraw at any time if they did not want to participate.The data collectors wore protective face masks and used sanitizers. Reasonable physical distance was kept between individuals during data collection

4.12 Dissemination and utilization of results

The findings will be presented to Jimma University scientific community in defense and after approval of the findings of this study by Jimma University Institute of Health, Faculty of Public Health and Department of Health, Behavior, and Society, the finding report will be disseminated to Jimma Zone Health Office, JUMC, Health Institutions in Jimma town and different NGOs working in diabetes mellitus. Finally, it will be published in a reputable journal close to diabetes.

CHAPTER FIVE: RESULT

5.1 Socio-demographic characteristic of diabetic patients

A total of 343 diabetic patients participated in the study; making a response rate of 93.9%. The mean age of the respondents was 48.1 (±14.6) years old. More than half of 182 (53.1%) were male respondents. The major share of participants were followers of Muslim religion, 176(51.3%); belong to Oromo ethnic group, 224(65.3%); married, 243(70.8%); and attended primary schools or less, 110 (61.2%). About 205 (59.8%) of the respondents were less than five years ever since on treatment support for diabetes.

Table 1: Socio-demographic characteristic of diabetic patients in Jimma University Medical Center, Ethiopia April 12-May 25 2020 (n=343)

Variables	Categories	Frequency &Percentages (%)
Age of respondents	18-29	47 (13.7)
	30-44	71 (20.7)
	45-60	160 (46.6)
	>60	65 (19)
Sex	Male	182 (53.1)
	Female	161 (46.9)
Marital status	Married	243 (70.8)
	Single	58 (16.9)
	Divorced	21 (6.1)
	Widowed	21 (6.1)
Religion	Muslim	176 (51.3)
	Orthodox	104 (30.3)
	Protestant	50 (14.6)
	Catholic	13 (3.8)
Ethnicity	Oromo	224 (65.3)
	Amhara	31 (9.0)
	Kaffa	26 (7.6)
	Gurage	24 (7.0)

	Dawuro	22 (6.4)
	Others	16 (4.7)
Educational status	Cannot read and write	104 (30.3)
	Primary school (1-8)	106 (30.9)
	Secondary school (9-12)	75 (21.9)
	College and above	58 (16.9)
Occupation	Government employee	82 (23.9)
	Housewife	75 (21.9)
	Merchant	65 (19.0)
	Student	61 (17.8)
	Farmer	60 (17.5)
Income (ETB)	<500	114 (33.2)
	500-1500	64 (18.7)
	1501-3000	86 (25.1)
	>3000	79 (23)
Distance to the nearest health facility	< 5km	190 (55.4)
	5km and above	153 (44.6)
Duration since treatment	1-5	205 (59.8)
	6-10	97 (28.3)
	above 10	41 (12.0)
Types of diabetes	Type 1	81 (23.6)
	Type 2	262 (76.4)

ETB=Ethiopian birr

5.2 Message exposure to diabetes self-care message among diabetic patient

Regarding message exposure, the majority of 330(96.2%) of the respondents heard about self-care practice in the past six months. Regarding the preferred channels to see or hear about diabetic self-care practice two-third (68.5%) of the respondents prefer television followed by radio (32. 4%). most of 225 (65.6%), the respondents prefer a message that is dramatic/funny.

Regarding specific self-care practice and answering more than one answer was possible, from all the participant majority 318(92.7%) heard about dietary practice, while 235(68.1) heard about foot care, 233(67.9%) and 108(31.4%) heard about regular physical exercise and self blood glucose monitoring respectively. Most of the respondents received information from 2-3 sources.

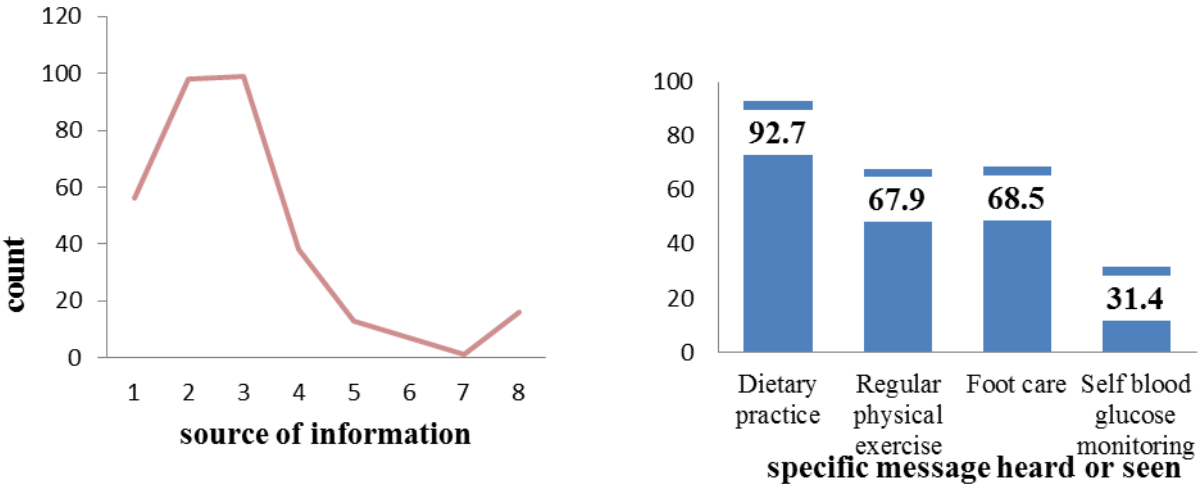

Figure 2 Exposure to repeated sources and content of self-care practice message in JUMC, Ethiopia, April 12-May 25 2020 (n=343)

5.3 Knowledge about diabetes mellitus and cues to action related to DM of respondents

Concerning knowledge on general diabetes mellitus majority of 271(79%) knew diabetes is a chronic disease. Comprehensive knowledge of general diabetes mellitus meanscore 59(±20.7) and cues to action with a mean score of 1.9(±1.1)

Table 2: knowledge about Diabetes mellitus of diabetes patient in Jimma University Medical Center, Ethiopia April 12-May 25 2020 (n=343)

Variables		Response categories	
		Yes (%)	No (%)
Diabetes is a chronic disease		271 (79)	72(21)
Diabetes is not curable		270(78.7)	73(21.3)
Ways of controlling diabetes	Diet only	318(92.7)	25(7.3)
	Regular physical exercise	233(67.9)	110(32.1)
	Taking drugs	211(61.5)	132(38.5)
	Measuring blood glucose	169(49.3)	174(51.7)
Signs of diabetes mellitus	Polyphagia	288(84)	55(16)
	Polydipsia	239(69.7)	104(30.3)
	Polyuria	227(66.2)	116(33.8)
	Weakness	193(56.3)	150(43.7)
Complications of diabetes mellitus	Foot ulcer/Gangrene	228(66.5)	115(33.5)
	Kidney problems	226(65.9)	117(34.9)
	Eye problems	206(60.1)	137(39.9)
	Heart problems	188(54.8)	155(45.2)
	Hypoglycemia	164(47.8)	179(52.2)
	Hypertension	161(46.9)	182(53.1)
	Nerve problems	151(44)	192(56)

5.4 Risk Perception and Efficacy of Respondents

5.4.1 Description of perception items

Table 3; Description of Items Used to Characterize Perceptions Toward Diabetes Mellitus and Self-Care Practice Among Diabetes Mellitus Patients Visiting Jimma University Medical Center Ethiopia April 12-May 25 2020 (N=343)

Items	Strongly Disagree	Disagree (%)	Undecided (%)	Agree (%)	Strongly Agree
Perceived susceptibility to diabetic complication					
As a diabetic patient, I am at risk of getting diseases like (kidney, heart, and hypertension)	10(2.9)	26(7.6)	38(11.1)	223(65)	46(13.4)
As a diabetic patient, it is possible through a process that I will get diseases like (kidney, heart, hypertension)	4(1.2)	46(13.4)	45(13.1)	194(56.6)	54(15.7)
As a diabetic patient, I have a chance of getting foot ulcer/gangrene	7(2.0)	10(2.9)	26(7.6)	228(66.5)	72(21)
As a diabetic patient, I have a chance of experiencing hypoglycemia	8(2.3)	15(4.4)	38(11.1)	204(59.5)	78(22.7
Perceived severity of the diabetes complication					
Experiencing diseases like kidney, heart, and hypertension is a serious problem for diabetic patients.	5(1.5)	7(2.0)	9(2.6)	227(66.2)	95(27.7)
Getting diseases like kidney, heart, and hypertension is life-threatening to a diabetic patient	5(1.5)	5(1.5)	26(7.6)	221(64.4)	85(24.8)
Getting foot ulcer/gangrene leads diabetic patients to a loss of body parts.	8(2.3)	24(7.0)	18(5.2)	198(57.7)	95(27.7)
Experiencing hypoglycemia can lead a diabetic patient to sudden deaths	9(2.6)	17(4.9)	30(8.7)	182(53.1)	105(30.6)
Perceived Response efficacy of diabetesself-care practice					
For a diabetes patient, engaging on regular physical exercise prevents from risks of diseases like kidney, heart, and hypertension	10(2.9)	20(5.8)	17(5.0)	186(54.2)	110(32.1)
For a diabetic patient, consuming foods like vegetables, fruits, low salt, etc] prevents risks from diseases like kidney, heart, and hypertension	5(1.5)	17(5.2)	15(4.4)	188(54.8)	118(34.4)
For a diabetic patient, regularly checkup my blood glucose	8(2.3)	20(5.8)	28(8.2)	178(51.9)	109(31.8)

prevents sudden death from. Hypoglycemia?					
For a diabetic patient, caring for foot prevents loss of body parts from gangrene	8(2.3)	10(2.9)	21(6.1)	185(53.9)	119(34.7)
Perceived Self-efficacy of to perform diabetes self-care practice					
As a diabetic patient, it is easy for me to engage in regular physical exercise to prevent risks from diseases like kidney, heart, and hypertension	14(4.1)	54(15.7)	44(12.9)	163(47.5)	68(19.8)
As a diabetic patient, I am able to adapt consuming foods [like vegetables, fruits, low salt, etc.] to prevent risks from diseases like kidney, heart, and hypertension	11(3.2)	20(5.8)	41(12.0)	176(51.3)	95(27.7)
As a diabetic patient, I am confident to regularly checkup my blood glucose to prevent hypoglycemia	18(5.2)	47(13.7)	53(15.5)	172(50.1)	53(15.5)
As a diabetic patient, it easy for me to care for my foot to prevent loss of body parts from gangrene	9(2.6)	17(5)	27(7.9)	178(51.9)	112(32.7)

5.4.2. Mean, Standard Deviation and reliability Scores of constructs of EPPM

Regarding perceptions, respondents had a Perceived threat mean score of 79.8(SD ±10.7) and a perceived efficacy mean score of 79.2 (SD±13.7). Cronbach's α score for all the constructs were > 0.7

Table 4 Respondents Mean, Standard Deviation and Reliability Scores of constructs of the Extended Parallel Process ModelinJimma University Medical Center, Ethiopia April 12-May 25 2020 (n=343)

Variables	Number of items	Response Range	Mean(±SD)	Cronbach's α
Perceived threat(overall)	8	0-100	79.8(±10.7)	0.884
Perceived susceptibility	4	0-100	77.8(±12.8)	0.808
Perceived severity	4	0-100	81.8(±12.1)	0.791
Perceived efficacy	8	0-100	79.2(±13.7)	0.884
Perceived response efficacy	4	0-100	76.1(±15.5)	0.876
Perceived self-efficacy	4	0-100	82.3(±14.5)	0.791

5.5 Difference in perceptions (perceived threat and perceived efficacy) by sociodemographic characteristic and knowledge of the respondents

Analysis of variance (ANOVA) showed that perceived threat was significantly different by some sociodemographic variable (age, educational status); for example, post hoc test using Bonferroni method showed that those respondents whose age range between 18-29 had higher mean perceived threat score as compared to other age groups ($p<0.001$). Additionally, as the level of education increases perceived threat score increases ($p<0.05$). Moreover, an independent sample t-test (equality of variance assumed) showed that there is a positive mean difference in perceived threat between respondents having good and poor knowledge.

Post hoc test using Tamhane method showed that as the level of education increases there is a significant positive mean difference in score of perceived efficacy. Moreover, an independent sample t-test (equality of variance assumed) showed that there is a positive mean difference in perceived efficacy between respondents having good and poor knowledge

5.6 Characterization of perceptions toward diabetes mellitus and self-care practice among diabetes mellitus patients

Among the respondents 73(21.3%) were responsive respondents, 61(17.8%), were fear control respondents, 80(23.3%) were proactive and (37.6%) were no response respondents.Moreover, 173(50.4%) of the respondents belong to fear control response based on discriminatory value.

Table 5Characterization of perceptions toward diabetes mellitus and self-care practice among diabetes mellitus patients in Jimma University Medical Center, Ethiopia April 12-May 25 2020 (n=343)

PERCEIVED	**PERCEIVED EFFICACY**	
THREAT	**High Efficacyn (%)**	**Low Efficacy n (%)**
High Threat n (%)	73 (21.3%) **Quadrant I**: Responsive (Danger Control)	61 (17.8) **Quadrant II**: Avoidant (Fear Control)
Low Threat n (%)	80 (23.3%) **Quadrant III**: Pro-Active (Small Danger Control)	129 (37.6) **Quadrant IV**: No Response(indifferent)
Control response based on DV	173 (50.4%) (Fear Control Response)	170 (49.6%) (Danger Control Response)

5.7 Relationship between diabetic self-care messages and self-care practices

In this study Control response based on discriminatory value best predicts actual self-care practice(r=0.487) as compared to control response based on quadrants (r=0.314)more over 126(72.8%) of fear control respondents were in poor diabetes self-care practice and 107(62.9%) of danger control respondents were in good in self care practice.

Table 6Relationship between responses to diabetic self-care messages and self-care practices of diabetes patients in JUMC, Ethiopia April 12-May 25 2020 (n=343)

Response category	Self care practice category	
	Poor self-care (%)	Good self-care (%)
Fear Control	126(72.8)	47(27.2)
Danger Control	63(37.1)	107(62.9)

5.8 Diabetic self-care practice of diabetic patients

Among all respondents of this study, more than half of them 189 (55 %) are in poor diabetic self-care practice.

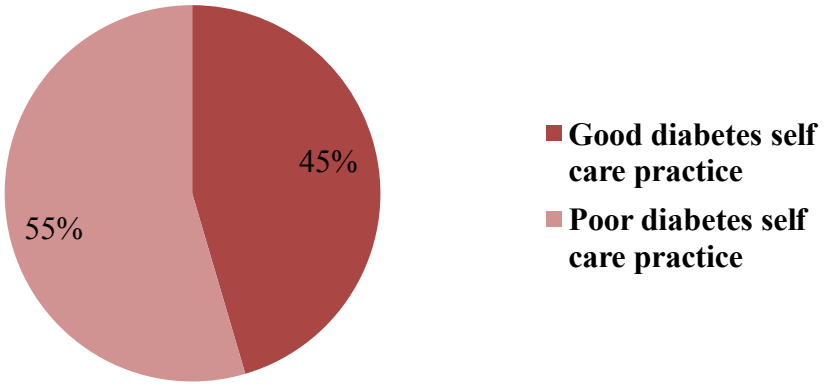

Figure 3showing diabetic self-care practice of diabetic patient in Jimma University Medical Center, Ethiopia April 12-May 25 2020 (n=343)

5.9 Difference in mean Diabetic Self Care Practice by Efficacy Threat Interaction

Analysis of variance(ANOVA) showed that mean self-care practice score was significantly different by efficacy/ threat interaction (quadrants); for example, post hoc test using Bonferroni method showed that responsive respondentsscored high in mean diabetes self-care practice as compared to fear control and no response respondentsadditionallyproactiverespondents scored high in mean diabetes self-care practice as compared to fear control and no response respondents

Table 7Showing Difference in mean Diabetic Self Care Practice by Efficacy Threat Interaction (Quadrants) of diabetes patients in JUMC, Ethiopia April 12-May 25 2020 (n=343)

ANOVA test statistics	Post hoc Method	Reference groups	Comparison group	Mean difference	P-value	95%CI
F=18.261	Bonferroni	Responsive	Proactive	0.22	0.711	(-0.23,0.68)
df=3			Fear Control	0.79	<0.001	(0.29,1.29)
P-value <0.001			No response	1.03	<0.001	(0.62,1.45)
		Proactive	Fear Control	0.56	<0.014	(0.07,1.05)
			No response	0.80	<0.001	(0.39,1.21)
		Fear control	No response	0.24	0.900	(-0.20,0.68)

5.10 Defensive avoidance scores of diabetes patients

Regarding Defensive avoidance of diabetic complications of respondents (fear control response) participants scored a mean defensive avoidance score of 47.9(SD ±21.4).

5.11 Difference in defensive avoidance (fear control response) by Efficacy Threat interaction (quadrants)

Analysis of variance (ANOVA) showed that the score of defensive avoidance was significantly different by efficacy/threat interaction; for example, post hoc test using Bonferroni method showed that fear control respondents scored high in mean defensive avoidance score compared to responsive and proactive respondents.

Table 8Showing Difference in mean Defensive Avoidance Score by Efficacy Threat Interaction (Quadrants) of diabetes patients in JUMC, Ethiopia April 12-May 25 2020 (n=343)

ANOVA test statistics	Post hoc Method	Reference groups	Comparison group	Mean difference	P-value	95%CI
F=18.261	Bonferroni	Fear Control	Responsive	3.09	<0.001	(1.55,4.63)
df=3			Proactive	2.30	<0.001	(0.79,3.82)
P-value <0.001			No response	0.76	0.85	(-0.61,2.14)
		No response	Responsive	2.32	<0.001	(1.02,3.63)
			Proactive	1.54	0.008	(0.23,2.80)
		Proactive	Responsive	0.78	0.89	(-0.65,2.22)

5.10 Bivariate logistic regression

On bivariate analysis for a response to diabetes self-care message, from Sociodemographic factors; level of education, distance to the nearest health facility,duration since treatment, types of DM, from communication factors source of information, preferred message appeals and cues to action and knowledge about diabetes mellitus were selected as a candidate variable for multivariate logistic regression

table9: Candidate variables of bivariate analysis for characterization of perceptions toward diabetes mellitus and self-care practice among diabetes mellitus patients visiting jimma university medical centerethiopia, april 12- may 25, 2020

Variables	Categories	Message response		COR (95%CI)	P-value
		Fear control	Danger control		
Level of Education	Cannot read and write	69(66.3)	35(33.7)	1	
	1-8	65(61.3)	41(38.7)	1.24 (0.707,2.186)	0.866
	9-12	27(36.0)	48(64.0)	3.50 (1.880,6.533)	0.009*
	College and above	12(20.7))	46(79.3)	7.55 (3.554,16.068)	< 0.001*
Distance to the nearest health facility	< 5km	88(46.3)	102(53.7)	1.449(0.945,2.222)	0.089*
	5km and above	85(55.6)	68(44.4)	1	
Duration since treatment(years)	1-5	104(50.7)	101(49.3)	1	
	6-10	53(54.6)	44(45.4)	0.855(0.527,1.388)	0.526
	above 10	16(39)	25(61)	1.609(0.811,3.191)	0.173*
Types of DM	Type 1 DM	28(34.6)	53(65.4)	2.35(1.397,3.940)	0.001*
	Type 2 DM	145(55.3)	117(44.7)	1	
Preferred message appeal	Fear arousal	90(76.3)	28(23.7)	1	
	Dramatic	83(36.9)	142(63.1)	5.49 (3.325,9.096)	<0.001*
Sources of information				1.793(1.475,2.179)	<0.001*
Cues to action				1.558(1.256,1.932)	<0.001*
Knowledge of DM				1.04 (1.026,1.051)	<0.001*

** Indicates candidate variables for multiple regression which have P-value <0.25 in the bivariate results, COR = crude odds ratio, CI = confidence interval.*

5.11 Predictors for characterization of perceptions toward diabetes mellitus and self-care practice among diabetes mellitus patients

The result of the multivariate logistic regression model revealed that educational status,information sources, knowledge of diabetes mellitus, preferred message appeals were predictors for characterization of perceptions toward diabetes mellitus and self-care practice among diabetes mellitus patients

The study revealed respondents who completed college and university were 4.8 times more likely to respond to self-care message in favor of controlling the danger of diabetes compared to those who cannot read and write [AOR=4.8(2.016, 11.612)] and those who prefer dramatic/funny message were 5.2 times more likely to respond to self-care message in favor of controlling the danger compared to those who prefer fear-arousal message [AOR=5.2(2.786, 9.706) (see table 10).

Table 10 Predictors for characterization of perceptions toward diabetes mellitus and self-care practice among diabetes mellitus patients visiting JimmaUniversityMedical CenterEthiopia, April 12- May 25, 2020

Variables	Categories	COR (95%CI)	AOR (95%CI)	P-value
Level of Education	Cannot read and write	1	1	
	1-8	1.24 (0.707,2.186)	0.94 (0.466,1.901)	0.866
	9-12	3.50 (1.880,6.533)	2.74 (1.284,5.878)	0.009*
	College and above	7.55 (3.554,16.068)	4.84 (2.016,11.612)	< 0.001*
preferred message appeal	Fear arousal	1	1	
	Dramatic	5.49 (3.325,9.096)	5.2 (2.786,9.706)	< 0.001*
Knowledgeof diabetes mellitus		1.04 (1.026,1.051)	1.2 (1.055,1.255)	0.002*
Source of information		1.79 (1.475,2.179)	1.76 (1.411,2.203)	< 0.001*

Hosmer and Lemeshow's goodness-of-fit test was chi square of 13.968 with P-value of 0.083

**Indicates significant independent predictors (p-value <0.05for characterization of perceptions toward diabetes mellitus and self-care practice among diabetes mellitus patients after adjusting all the study variables, AOR = adjusted odds ratio, COR=crude odds ratio CI = confidence interval.*

CHAPTER SIX: DISCUSSION

This study assessedcharacterization of perceptions toward diabetes mellitus and self-care Practice among diabetes mellitus patients interms of the cognitive appraisal of the threat and efficacy in averting diabetes complications using the EPPM model.

This study showed that the prevalence of controlling the danger of diabetes mellitus was 49.6%. More than one-third of the respondents belong to no response group and above one-fifth of the respondents are controlling their fear of diabetes complication. Control response based on discriminatory value best predicts diabetes self-care practice. Educational status and age of the respondents have positive effect in perceived threat and perceived efficacy. Moreover, responsive and proactive respondents had better diabetes self-care practice as compared to no response and fear control respondents. Different factors like educational status, information sources, and preferred message appeal, and knowledge of diabetes mellitus were predictors of controlling the danger of diabetes.

In this study prevalence of controlling the danger of diabetes was 49.6%, there is no finding from other studies, which supports or contradicts this finding.

More than one-third of the respondents belong to no response group: also according to fear appeal literatures (37,52) these respondents belong to No Response i.e. People not considering the diabetes complication to be real or relevant to them; often not even aware of the diabetes complications. This shows a theory-based risk communication gap to bring about desired self-care practices in this population. Moreover, above one-fifth of the respondents are controlling their fear of diabetes complication: this are people controlling their fear by defensively avoiding to think about diabetes complication, or by reacting against it according to fear appeal literatures(37,52). This hampers the goal of risk communication which is moving individuals to danger control responses therefore special health risk communication needs to be developed to break through this defensive mechanism(25).

In this study younger visitors had a higher perceived threat as compared to the older visitors. The possible explanation is that those old visitors who survived longer with diabetes have little

reason to worry about the complication and its management and younger people have more exposure to different media (social media) which allows them to learn more about the significance and the likelihood of occurrence of diabetes complication (53).

Both the perceived threat and efficacy increases with the level of education and knowledge of DM. This may be due to that educated people are more knowledgeable about susceptibility and severity of diabetes complications and have more concerns about developing the complication and ways of reverting diabetes complications by performing self-care practice. Moreover educated people have access to scientific information about the threat of diabetes complication and the effectiveness of self-care practice (48).

Responsive respondents had better diabetes self-care practice as compared to no response and fear control respondents. This pattern of means is consistent with the EPPM and with studies done in different parts of the world using EPPM in different contexts (37,38,40). According to the EPPM, high-threatening messages coupled with high-efficacy recommendations are usually an effective means for reducing the threat (diabetes complication), and moving individuals toward protection motivation (self-care practice).

Proactive respondents had better diabetes self-care practice as compared to no response and fear control respondents. This is consistent with fear appeal literature (52) that proactive individuals are expected to demonstrate a lower level of danger control, which reinforced the EPPM's major suggestions of efficacy i.e. Perceptions of efficacy must be higher than perceptions of threat for fear appeals to be accepted by their viewer(37,54).

In this study for a given level of perceived efficacy, variation in perceived threat did not result in a difference of self-care practice among respondents which is evidenced by the absence of difference in self-care practice between responsive and proactive respondents despite variation in threat level between the two groups and which is also evidenced by the absence of self-care practice difference between fear control and no response respondents despite this respondents had variation in threat with the same level of efficacy, furthermore proactive respondents had a better self-care practice compared with fear control respondents despite having a lower level of threat than the former respondents, this implies that in this respondents efficacy is a major

determining factor which persuades individuals toward self- care practice which is supported by EPPM in which efficacy determines the nature of a response in this case diabetes self-care practice (37). Therefore, in this population manipulation of efficacy to the highest level while maintaining the level of threat is the best that fits the existing audience's message processing to bring about desired diabetes self-care Practice.

This study reveals that fear control respondents were defensively avoidant of thinking about diabetes complication than responsive and proactive respondents which is consistent with studies done in different parts of the world with different contexts and EPPM prediction that the stronger the threat, the stronger the fear control response and the weaker the efficacy the greater the fear control response. This indicating that if fear appeals are to be used they should be accompanied by high efficacy intervention (40,55).

According to this study, control responses based on discriminatory value best predicts diabetic self-care practice as compared control responses based on quadrants, this might be due to the use of median cut points to dichotomize threat and efficacy to high-low categories to form four quadrants resulting in misclassification of individuals close to but on opposite sides of the cut point as very different rather than very similar (56,57).

The study revealed that respondents who completed college and university had higher odds to respond to self-care messages in favor of controlling the danger of diabetes compared to those who cannot read and write. This might be individualswith a higher educational level have better access to health-related information and can easily acquire the information they need by reading guidelines and implement professional recommendations into practice (58).

In this study increment in a score of knowledge of diabetes mellitus increases odds of controlling the danger of diabetes. This is because Self-care behaviors are the final outcome of cognitive processes people employ during knowledge acquisition. Moreover, patients with diabetes are only willing to perform self-care behaviors when they acquire the necessary knowledge about prevention methods (53,58,59).

In this study, fear arousal message had a negative effect in controlling the danger of diabetes as

compared to dramatic/funny appeal, which is supported with a study conducted in Ethiopia in other contexts and with the assumption of EPPMmodel, which states; fear is a central variable that motivates individualsvia developing defensive motivation of threat. Moreover,a message should use the appropriate appeal to persuade the receiver(34,37).Therefore precaution needs to be taken in communicating fear during diabetes self-care practice (60).

This study revealed that increment in the score of an information source increases the odds of controlling the danger of diabetes. This is supported by the study conducted on the repetition of the message which states that message repetition offers an audience more opportunities to scrutinize arguments and engage in systematic processing (the comprehensive analysis of a message which requires both cognitive ability and capacity) which leads to attitude changes(61).

6.1 Limitation of the study

To the best of the investigator's knowledge there were no similar published studies (with the same behavior) in Ethiopia, so findingswere not well discussed in the related literature.Additionally, since quadrants were classified based on the median, this results in misclassification of groups, so precaution needs to be taken when interpreting and utilizing study findings. Moreover, since the data collection method was self-report rather than direct observation of the patient's self-care practice this may result in courtesy bias.However, efforts were made to minimize the bias by recruiting data collectors from other department and telling the participants about the anonymity of the data.

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATION

7.1 Conclusion

In this study, there is a significant gap in controlling the danger of diabetes.Variables like the level of education, knowledge of diabetes mellitus, information sources, and message appeals were independent predictors of controlling the danger of diabetes. Designing message having higher efficacy while maintaining the level of threat is thebest that fits the existing audience's message processing to bring about desired diabetic self-care Practice

7.2 Recommendation

To Jimma Zone Health Bureau, and any organizations working in the area ofdiabetes should follow the following recommendations.

- Communication targeting diabetic self-care practice should design message having a higher level of efficacy
- Different communication channels (printed, audiovisuals, religious leaders, parents) should be used to bring about the desired self-care practice

To Jimma University, Department of Health, Behavior, Society, and Jimma zone health bureau

- Should give training to health institutions in Jimma zone in designing diabetic self-care message particularly using RBD (based on discriminating value score)

To Health workers and Health Institutions in Jimma zones

- Should use the RBD scale to design an effective self-care practice message based on an individual level.

To Researchers

- Further studies, using the same model and analytical study design should be conductedon message response to explicitly tailor themessages.

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Consent form

My name is _____and I am collecting data for the research being conducted by Mr. Mohammed Jemal, Masters Student from Jimma University. He is doing research on Response to diabetic self-care message among diabetic patients as the partial fulfillment for a master's degree in Health Promotion and Behavior. You are selected to be one of the participants from the study. This interview probably takes a few minutes. I would like to assure you that all you tell during the interview will be strictly confidential and that information collected from you will be used only in scientific reports without any mentioning of personal information including your name. There is no harm or incentive for your participation. Information gathered from the study will be used to improve health messages for diabetic patients. If you have any question about this study you may ask me or principal investigator; Mr. Mohammed Jemal using his phone number+251977203888 or his email mahirmohammed159@gmail.com.

This study is overseen by

1 MrYohannesKebede phone number +251913232040 email yohanneskbd@gmail.com

2 MrsDemumaAmdisa phone number +251913754330 email amdisademuma@gmail.com

Do you have any questions? Can I proceed with the questions?

No ☐(Thank you and stop) Yes ☐thank you and continue)

Questioner code_____

Name of data collector_____sign_____date_____

Name of supervisor_____sign_____date_____

CHAPTER NINE: QUESTIONNAIRES

Annex 1 English Questionnaire

Direction *1:* Now you are expected to fill about your socio-demographic characteristics. Please answer by circling your choice and fill in the blank spaces for others.

S.no	Question/variable	Response
SD 001	Age of the respondent	_____ years
SD 002	Sex of the respondent	a. Male b. Female
SD 003	What is your marital status?	1.Single 2.Married 3.Divorced 4.Widowed
SD 004	Religion of respondent?	1. Muslim 2. Orthodox 3. Protestant 4. Catholic 5.Other specify_____
SD 005	What is your ethnicity?	1. Oromo 2. Amhara 3. Gurage 4. Kaffa 5. Dawuro 6. Other specify_____

SD 006	What is your level of education?	1.Can't read and write 2. grade completed_____ 3 Other
SD 007	Monthly income	_____
SD 008	Distance to the nearest health facility in km	_____
SD 009	What is your occupation	1.Farmer 2.Merchant 3.Housewife, 4.Government employee 5.Other Specify_____
SD 010	How long have you been since diagnosed with diabetes mellitus	_____
SD 011	How long have you been on treatment	_____
SD 012	Which diabetic patient type	1. Type 1 2. Type 2

Part 2: Perceived threat of Diabetes complication among diabetes patient

Direction 2: now I am going to ask you some questions about your beliefs about the likelihood of experiencing harmful consequences from diabetes. [Read the responses, & check '√" infront of each question under the responded option]

SD=Strongly Disagree

D= Disagree

Und=Undecided

A=Agree

SA=Strongly Agree

No	**Questions**	**Response category**				
		SD	**D**	**und**	**A**	**SA**
		1	2	3	4	5
Perceived susceptibility to diabetes complication						
PT 001	As a diabetic patient, I am at risk of getting diseases like (kidney , heart and hypertension					
PT 002	As a diabetic patient, it is possible through process that I will get diseases like (kidney, heart, hypertension)					
PT 003	As a diabetic patient, I have a chance of getting foot ulcer/gangrene					
PT 004	As a diabetic patient, I have a chance of experiencing hypoglycemia					
Perceived severity of diabetes complication						
PT 005	Experiencing diseases like kidney, heart and hypertension is a serious problem to diabetic patient.					

PT 006	Getting diseases like kidney, heart and hypertension is life threating to diabetic patient					
PT 007	Getting foot ulcer/gangrene leads diabetic patients to loss of body parts.					
PT 008	Experiencing hypoglycemia can lead diabetic patient to sudden deaths					

Part 3: Perceived Efficacy of the recommended self-care practice among diabetes patient

Direction 3 :Now I am going to ask you some questions about your beliefs on your ability, easiness and effectiveness of self-care practice in deterring diabetic complication. [Read the responses, & check '√" in front of each question under the responded option]

No	Questions	**Response category**				
		SD	**D**	**N**	**A**	**SA**
		1	**2**	**3**	**4**	**5**
Perceived Response efficacy of self-care practice						
PE001	For a diabetic patient, engaging on regular physical exercise prevents from risks of diseases like kidney, heart and hypertension					
PE002	For a diabetic patient, consuming foods like vegetables, fruits, low salt etc] preventsrisks from diseases like kidney, heart and hypertension					
PE003	For a diabetic patient, regularly checkup my blood glucose prevents sudden					

	death from. hypoglycemia?					
PE004	For a diabetic patient, caring for foot preventsloss of body parts from gangrene					
Perceived Self-efficacy to perform self-care practice						
PE 005	As a diabetic patient, it is easy for me to engage on regular physical exercise prevent risks from diseases like kidney, heart and hypertension					
PE 006	As a diabetic patient, I am able to adapt consuming foods [like vegetables, fruits, low salt etc.] to prevent risks from diseases like kidney, heart and hypertension					
PE 007	As a diabetic patient, I am confident to regularly checkup my blood glucose to prevent hypoglycemia					
PE 008	As a diabetic patient, it easy for me to care for my foot to prevent loss of body parts from gangrene					

Part 4: Cues to action related to diabetes mellitus

Direction 4: Now I am going to ask you some questions aboutthings that triggers/motivates you to do self-care practice. [Read the responses, &check '√" in front of each question under the responded option]

No	Questions	1. Yes	2. No
C 001	Do you have a family member with diabetes complication?		
C 002	Have you ever seen /heard about a person who follow recommended self-care practice in last one month		
C 003	Have you ever seen /heard of person having diabetes complication in the last one month		
C 004	Have you ever heard through media about recommended self-care practice during last one month?		

Part 5: Diabetes knowledge assessment among diabetes patient

Direction 5: Now I am going to ask you some questions about your knowledge regarding diabetes and its complication. [Read the responses, & check circle in front of each question under the responded option]

No	Questions	Response category		Skip
K 001	Diabetes is chronic (lifelong) disease	1 yes	0 No	
K 002	diabetes is curable	1. Yes	0. No	
K 004	Tick that are ways of controlling (managing)diabetes **Instruction: [don't read option, give one more chance to mention any thing remaining after ticking all responses given**diabetes	1. Diet only 2. Regular Exercise 3. Measuring of blood glucose 4. Taking drug 5. I don't know 6. Other (specify)		
K 007	Tick that are the signs of diabetes mellitus **Instruction: [don't read option, give one more chance to mention any thing remaining after ticking all responses given**	1. Polyphagia 2. Polydipsia. 3. Polyuria. 4. Weakness. 5.i don't know 6 Specify if any_____		
K 009	Tick that are complication of diabetes mellitus? **Instruction: [don't read option, give one more chance to mention any thing remaining after ticking all responses given**	1 Hypoglycemia 2 Foot ulcer/ Gangrene 3 Nerve problems 4 Eye problems 5 Heart problem 6 Kidney problems 7 Hypertension 8 I don't know 9 Other specify_____		

Part 6: Message exposure and recall to diabetes self-care among diabetes patient

Direction 6: Now I am going to ask you some questions about your Message exposure and recall to diabetes self-care. [Read the responses, & circle in front of each question under the responded option]

M 001	Have you heard about diabetes self-care in the last 6 month	yes No
M 002	From where you received information about diabetes self-care practice **Instruction: [don't read option, give one more chance to mention any thing remaining after ticking all responses given]**	1. Health institutions 2. Religious institutions 3. Friends 4. Parents/Spouse 5. Television 6. Radio 7. posters 8. leaflets /brochures 9. Others
M 003	Preferred channels to hear/see about diabetes self-care practice **Instruction: [don't read option, give one more chance to mention any thing remaining after ticking all responses given]**	1. Television 2. Radio 3. Peer discussions 4. posters 5. Leaflets/brochures 6. other
M 004	Frequently heardMessage/behavior about diabetes self-care practice **Instruction: [don't read option, give one more chance to mention any thing remaining after ticking all responses given]**	1. Dietary practice 2. Regular physical exercise 3. Foot care 4. Self-blood glucose monitoring
M 006	Preferred messageAppeals of diabetic self-care practice	1. Dramatic/funny 2. Fear arousal messages

Part 7: Diabetes self-care activities during the past 7 days.

Direction 7: Now I am going to ask you some questions about yourself-care practice of the past seven days. [Read the responses, &check "√" in front of each question under the responded option]

No	Questions	Response							
		0	1	2	3	4	5	6	7
SC 001	How many of the last SEVEN DAYS haveyou followed a healthful eating plan?								
SC 002	On average, over the past month, how many DAYS PER WEEK have you followed your eating plan?								
SC 003	On how many of the last SEVEN DAYS did you three servings of fruits and vegetables?								
SC 004	On how many of the last SEVEN DAYS did you eat high fat foods such as red meat ?								
SC 005	On how many of the last SEVEN DAYS did you participate in at least 30 minutes of physical activity? (Total minutes of continuous activity, including walking)								
SC 006	On how many of the last SEVEN DAYS did you participate in a specific exercise session (such as swimming, walking, biking) other than what you do around the house or as part of your work?								
SC 007	On how many of the last SEVEN DAYS didyou test your blood sugar?								

SC 008	On how many of the last SEVEN DAYS didyou test your blood sugar the number oftimes recommended by your health care provider?								
SC 009	On how many of the last SEVEN DAYS didyou check your feet?								
SC 010	On how many of the last SEVEN DAYS didyou inspect the inside of your shoes?								

Part 8: Defensive avoidance of diabetic patient to diabetes complication

Direction 8: Now I am going to ask you some questions about your thought about diabetes complication. [Read the responses, &check "√" in front of each question under the responded option]

No	Questionnaire	**Response categories**				
		SD	**D**	**N**	**A**	**SA**
		1	**2**	**3**	**4**	**5**
D 001	I didn't want to think about my risk for Diabetes complication					
D 002	I didn't want to do anything to prevent diabetes complication					
D 003	I didn't want to protect myself from diabetes complication					
D 004	I didn't want to think about it at all					

Annex 2: Afan Oromo Questionnairre

Unkaawaligaltee

Ashamaa

Ani…… jedhama.qo'annoomataduree "Akkaataafuudhannaadhaamsawaa'ee of eeggannoodhibeesukkaaraafofiingoodhamu" jedhukessattihojjetaaqindessaaodeffannodha.Qo'annoonkunbarataamaastarsiiyuunivarsitiJimmaa KutaabarnootaaFayyaa, Amala fi HawaasairraakantaanobboMahammadJamaaliinkangaggeffamuyommuuta'unamootadhibeesukkaraafgiddu gala MeediikaalaJimmaattihordofanirrattixiyyeeffata.Kabajamoohirmaatakenyaa, gaaffileenarmaangadiiKutaaadda addaankanqopha'anyommuuta,udeebiinisinnuufkennitanisgutumaangututtiiccitidhaankanqabamuta'a.kanamirkanessufisMaqaakeessanhinbarressinuu.gaafannoo kana deebisuudhaanhirmaachuukeessaniinmiidhaanisinirrattigahutokkoyyuhinjiru,hirmaannaankeessangutumaagututtifeedhiidhaankanhundaa'eewaanta'eefyeroobarbaaddanhirmaannaakeessanaddaan kutunidandeessu. Deebiinhaaqaannuufkeennitanakkaataawaa'eedhaamsa of eeggannoodhibeesukkaaraafofiingoodhamukeennamufoyyessuufnigargaara.Gaaffileearmaangadi idebisuufdaqiiqaa 30 qofaisinirraafudhannaa.

Galatoomaa!!

Nan hirmaadha

Mallattohirmaata_____Guyyaa_____

Lakkihinhirmaadhuu

Mallattooqindessaodeffannoo_____Guyyaa_____

Gaaffiiyooqabaattan

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Kutaa1: Odeffannooibsituuhawaasumma

Ajaja 1: Gaaffiifilannooqabuuf, deebiikeeittimarii, akkasumasakkumabarbaachisaata'ettideebiikeeiddooduwwaakennameirrattiibarreessi.

lakk	Gaaffii	Deebii	
H001	Umrii	_____	
H002	Saala	1. Dhiira 2. Dhala	
H003	Haalagaa'ilaa	1. Kanhinfuune /heerumnee 2. Kanfuudhee/heerumte 3. Kanhikee/te 4. Kanjalaadu'ee	
H004	Amantaa	1. Muslima 2. Ortodooksii 3. Proteestaantii 4. Kaatooliiki 5. Kabiraa_____	
H005	Saba	1. Oromoo 2. Amhaara 3. Guraage 4. Kafaa 5. Daawuroo 6. Kabiraa_____	
H006	Sadarkaabarnoota	1. Kandubbisuu fi barrressuuhindandeegne 2. Kutaafixxee_____	
H007	Fageegnabuufatafayyaanaannojireenyakeessanirraakiloo meetiiriidhaan	_____	
H008	Galiiji'aan		
H009	Hoojiinkeemaali	1. Qooteebulaa 2. Daldalaa 3. Haadhamanaa 4. Hojjetaamotummaa 5. Kabiraa_____	
H0010	Dhibeesukkaaraaakkaqabdanogeessafayyaanergaisinitti himeehaammamtureraa(ji'aan/waggaan	_____	
H011	Qorichaafudhachuuergajalqabdanhaammamtureeraaa(ji' aan/waggaan)	_____	
H012	Dhukkubasukkaaragosakamiinqabdu	1. Dhukkubasukkaaraagosat okkofaa 2. Dhukkubasukkaaraagosal ammaffaa	

Kutaa 2: ilaalchawaa'eemiidhaadhibeesukkaaraawalxaxaata'eenqabamuu fi hammeenyaadhukkubasukkaarawalxaxaa

Ajaja 2 ammagaaffileeilaalchabalaadhukkubasukkaaraawalxaxaata'eenqabamuu fi hammeenyaadhukkubasukkaaraawalxaxaasiigaafachuufi,Mallattoo (√) kana iddoogaaffiiwaliindeemukeessakaa'uundeebisi.

BM=baayyeenmormaa

M=mormaa

HM=hinmurteessine

W=waligalaa

BW=Baayyeewaligalaa

Lakk	**Gaaffii**	**Deebii**				
		BM	**M**	**HM**	**W**	**BW**
		1	**2**	**3**	**4**	**5**
ilaalchawaa'eemiidhaadhibeesukkaaraawalxaxaata'eenqabamuu						
I001	Dhibeesukkaaraawaanqabuuf ,dhukkubniakka(kalee,onnee,dhibbaadhigaa) naqabuudanda'a					
I002	Dhibeesukkaaraawaanqabuufyeroodheeraakeessattidhukubniakka(kalee,onnee,dhibbaadhigaa) naqabuudanda'a					
I003	Dhibeesukkaaraawaanqabuufdhukkubnimadaamilaayookiingaangriini innaqabuudanda'a					
I004	Dhibeesukkaaraawaanqabuuf ,hir'inasukkaaradhiiganamudachuudanda'a					
Ilaalchahammeenyaadhukkubasukkaaraawalxaxaa						
I005	Dhibee(kalee,onnee,dhibbaadhigaa) dhaanqabamuunnamadhukkubasukkaaraaqabuufrakkooguddaadha					
I006	Dhibeenakka(kalee,onnee,dhibbaadhigaa) dhaanqabamuunlubbuunamaasaaxiiluudanda'a					
I007	NamadhibeesukkaaraaqabuufMadaamilaayookiingaangriinidhaanqabamuunhir'inaqaamaafsaaxiluudanda'a					
I008	Hir'innisukkaaradhiigaa, namadhibeesukkaaraaqabudu'atasaafsaaxiluudanda'a					

Kutaa3: Ilaalchawaa'eebu'aqabeessummaa fi salphummaa of eeggannodhibeesukkaaraatiifofifgoodhamuu

Ajaja 3: ammagaaffileeIlaalchabu'aqabeessumma fi salphummaa(ofittiamanuu) of eeggannodhukkubasukkaaraatiifofiifgoodhamusigaafachuufi ,Mallattoo (√) kana iddoogaaffiiwaliindeemukeessakaa'uundeebiisi

Lakk	Gaaffii	Deebii				
		BM	M	HM	W	BW
		1	2	3	4	5
Ilaalchawaa'eebu'aqabeessummaa of eeggannoodhibeesukkaaraatiifofifgodhamuu						
B 001	Namadhibeesukkaaraaqabuuf,,sosocho'insaqaamaayeroomaraguyyaadhaanda qiiqaasoddoomaafhojjeechuundhukkubaakka (kalee,onnee,dhibbaadhigaa) niittisaa					
B 002	Namadhibeesukkaaraaqabuuf,kuduraalee fi fuduraaleenyaachuunbalaadhukkubaaakka (kalee,onnee,dhibbaadhigaa) niittisaa					
B 003	Namadhibeesukkaaraaqabuufguyyaaguyyaadhaanqabiyyeesukkaaradhiigaofii qorachuundu'atasaahir'inasukkaaradhigaatiindhufuirraaniittisaa					
B 004	Namadhibeesukkaaraaqabuufof eeggannoomiilaagochuunhir'inaqaamagaangriini/madaamilaatiindhufuuirraan iittisaa					
Ilaalchasalphummaaofeeggannodhukkubasukkaaraatiifofiifgodhamuu						
B 005	Akkanamadhibeesukkaaraaqabuutti.sosocho'insaqaamaadaqiiqaasoddomaafgu yyaaguyyaadhaanhojjechuudhaandhukkubaakka (kalee,onnee,dhibbaadhigaa) of irraaittisuunanaafsalphaadha					
B 006	Akkanamadhibeesukkaaraaqabuutti muduraalee fi fuduraaleenyaachuudhaandhukkubaakka (kalee,onnee,dhibbaadhigaa) of irraittisuunnandanda'a					
B 007	Akkanamadhibeesukkaaraqabuutti guyyaaguyyaadhaanqabiyyeesukkaaradhiigakooilaaluudhaanhir'inasukkaaraad hiigato'achuu nan danda'a					
B 008	Akkanamadhibeesukkaaraaqabuutti of eeggannoomilakootiifgochuudhaanmadaamilaa/gaangriiniittiisuunnaafsalphaad ha					

Kutaa 4: waa'eeofeegannoodhibeesukkaaraafofiingoochuufwantootasiikakaasan

Ajaja 4: ammagaaffileewaa'ee of eegannoodhibeesukkaaraafofiingoochuufwantootasiikakaasanwaliinwalqabatesiigaafachuufi,Mallatto o (√) kana iddoogaaffiiwaliindeemukeessakaa'uundeebiisi.

Lakk	Gaaffii	**Deebii**	
		eyye	**miti**
Y001	Maatiidhibeesukkaarawalxaxaata'eenqabameqabdaa		
Y002	Ji'adarbeekeessattiiNama of eeggannoodhibeesukkaaraafofiingodhuuargiteyokiindhageessebeektaa		
Y003	Ji'adarbeekeessattinamadhibeesukkaaraawalxaxaata'eenqabameeargite/dhageessebeektaa		
Y004	Ji'adarbeekeessattiWaa'ee of eggannodhibeesukkaaraafofiingodhamudhageesse/argitebeektaa		

Kutaa 5: beekumsawaa'eedhibeesukkaaraafidhukkubasukkaaraawalxaxaa

Ajaja 5: ammagaaffileebeekumsaawaa'eedhibeesukkaaraafidhibeesukkaaraawalxaxaasigaafachuufi, bakkagaaffiiwaliindeemukeessageengookaa'uundeebiisi, akkasumasakkumabarbaachisaata'ettideebiikeebakkaduwwaakennameeirrattibarreessi.

Lakk	Gaaffi	Deebii		Irraadabra fadhuu
W001	Dhibeensukkaaraadhibeeyeroodheraadha	eyyee	miti	
W002	dhibeesukkaaraanifayyaa	eyyee	miti	
W004	Dhibeesukkaaraakaraakamiinyaaluunnidanda'ama?	1. Nyaataan 2. Sosocho'insaqaamaa yeroohundaan 3. Sukkaaradhiigakeessa aofiifsafaruun 4. Qoorichaan 5. Hinbeekuu 6. Kabiraa		
W007	Mallattooleedhibeesukkaaraata'anfiladhu	1. Haalmaleebeela'uu 2. Haalmaleedheebooch uu 3. Ammaammaboola'uu 4. Dadhabuu 5. Hinbeekuu 6. Kabiraa_____		
W009	Dhibeesukkaarawalxaxaata'anfiladhu **Hubachiisa:deebisaahinduubbisin ,ergadeebiiisaaxumureeboodawantiihaafeyoojiraa teecarraadabalatatokkolaadhuuf**	1 Hir'inaasukkaaradhigaa 2 Madaamilaa/Gaangriini 3 Dhukkubanarvii 4 Dhukkubaijaa 5 Dhukkubaonnee 6 Dhukkubakalee 7 Dhibbaadhigaa 8 hinbeekuu Kabiraa_____		

Kutaa6: Dhaamsayknergaa of eeggannoodhukkubasukkaaraaofiifgoodhamuukeessaakandhageessee fi kanyaadattuu

Ajaja6 **:**ammagaaffileeDhaamsayknergaa of eeggannoodhukkubasukkaaraaofiifgoodhamuukandhageessee fi kanyaadattuuwajjiinwalqabateesiigaafachuufi , iddoogaaffiiwaliindeemukeessattiigeengookaa'uundeebiisi,

Lakk	Gaaffii	Deebii
E 001	Ji'adarbankeessattiodeeffannoowaa'ee of eeggannoodhibeesukkaaraatiifofiifgoodhamuudhageessebeektaa	1. Eyyee 2. Miti
E002	Waa'eeOdeffannoo of eeggannoodhibeesukkaaraaofiifgodham **Hubachiisa: deebisaahindubbisin, ergadeebiiisaafixeeboodawantiihaafeyoojiraatee carraadabalataatokkolaadhuuf**	1. Jaarmayaafayy 2. Jaarmayaaaman 3. Hiriyaa 4. Maatii/dhiirsa/ 5. Teeleeviizyiini 6. Raadiyoo 7. Beeksisa 8. Liifleetii/brosh 9. Kabiraa
E003	odeeffannoo of eeggannoodhibeesukkaaraatiifofiifgoodhamuuilaaluufyookiindhagahuufkaraa /miidii'aakamiifdursakeennitaa **Hubachiisa:deebisaahindubbiisin ,ergadeebiiisaafixeeboodacarraadabalatatokkolaadhuuf Wantiihaafeyoojiraatee**	1. Teeleeviizyiini 2. Raadiyoo 3. Hiriyaawaliinm 4. Beeksisa 5. Liifleetii/broos 6. Kabiraa
E004	Yeroobaay'eedhaamsa/ergaa of eeggannoodhibeesukkaaraatiifofiifgodhamuukeessaamaaldhageessebeekta **Hubachiisa: deebisaahindubbisin, ergadeebiiisaafixeeboodacarraadabalatatokkolaadhuuf Wantiihaafeyoojiraatee**	1. Nyaata 2. Sosocho'insaqaama 3. Of eggannoomilaa 4. Qabiyyeesukkaaraa
E006	Ergaa of eggannoodhukkubasukkaaraatiifofiifgoodhamukeessaaisakamiifcaalaadursakennitaa	1. Kankoofalchiis 2. Kansodaachisu

Kutaa7:Gochootaofeeggannoonamadhibeesukkaaraaqabuunofiifraawwataman

Ajaja: ammagaaffileeGochoota of eeggannoonamadhibeesukkaaraaqabuunofiifraawwatamanwajjiinwalqabateeisingaafachuufi ,mallattoo (√) kana iddoogaaffiiwaliindeemukeessakaa'uundeebiisii

Lakk	Gaaffii
G 001	Torbandarbeekessattiguyyaameeqaafnyaatafayyaafta'uuhordoftee
G002	Ji'adarbeekeessatti ,torbanittiguyyaameeqaafkarooranyaatakeetiihordoftee
G 003	Torbandarbeekeessattiguyyaameqaafkuduraa fi fuduraayeroosadiiyknolinyaattee
G 004	Torbandarbeekeessattiguyyaameeqaafnyaatacoomaqabuunyaattee
G 005	Torbandarbeekeessattiguyyaameeqaafsosocho'insaqaamaayooxiqqaateedaqiiqaasoddoomaafhoojjettee
G 006	Torbandarbeekeessattihojiimanaa fi hojiikeetiinalaguyyaameeqaafakka (bishaandaakuu,karaaadeemuu,biskileetiioofuu,)irrattihirmaatte ,
G 007	Torbandarbeekessattiguyyaameeqaafqabiyyeesukkaaraadhiigakeeofiifsafartee
G 008	Torbandarbeekessattiakkaogeessiifayyaasittihimeettiguyyaameeqaafqabiyyeesukkaaraadhiigakeekessaaofiifsa
G 009	Torbandarbeekessattiguyyaameeqaafmiilakeehordoftee
G 010	Torbandarbeekessattiguyyaameeqaafkopheekeekeessaisaailaalte

Kutaa 8 dhibeesukkaaraawalxaxaayaadachuudhiisuuwaliinwaanwalqabatuu

Ajaja 8:

ammagaaffileedhibeesukkaaraawalxaxaayaadachuudhiisuuwaliinwaanwalqabatuusiigaafachuufi,

mallattoo (√) kana iddoogaaffiiwaliindeemukeessakaa'uundeebiisii

Lakk	Gaaffii	**Deebii**				
		BM	**M**	**HM**	**W**	**BW**
		1	**2**	**3**	**4**	**5**
DH 001	AkkanBalaadhibeesukkaaraawalxaxaatiifsaaxilamaata'eyaadachuuhinbarbaadu					
DH	dhibeesukkaaraawalxaxaata'eeofirraattisuufomaagochuuhinbarbaaduu					

002						
DH 003	dhibeesukkaarawalxaxaata'eeofiirraaittisuuhinbarbaaduu					
DH 004	Gonkumawaa'eedhibeesukkaaraawalxaxaata'eeyaadachuuhinbarbaadu					

Annex 3:Amharicquestionnairre

የስምምነትቅጽ

ስሜ ----------

ይባላልበጅማዩኒቨርሲቲየህክምናማዕከለየስኳርታማሚዎችስለስኳርህመምተኛለራሱስለሚያደርገውእንክብካቤመልክትአቀባበል**በሚለውጥናትውስጥበመረጃሰብሳቢነትነውየምሠራው፡፡ይህጥናትበጅማዩኒቨሪሲቲ፤ በጤና ት/ት ክፍልውስጥ፤የጤና ፤**

ስነባህሪእናህብረተሰብክፍልተማሪየሆኑትለአቶመሀመድጀማልየድህረምረቃኘሮግራምማሚያየሚሆንነው፡፡

በመጠይቁውስጥእርስዎየሚሰጡትማንኛውምመረጃበሚስጢርየሚጠበቅበመሆኑበማንኛውምመንገድለሶስተኛአካልአሳልፎአይሰጥምወይምአይጋለጥም::

በዚህጥናትዉስጥመሳተፍምንምአይነትአደጋንበተሳታፊውላይአያስከትልም፡፡

ተሳትፎአችሁበፈቃደኝነትላይየተመሠረተስለሆነበየትኛውምሰዓትጥናቱንአቋርጠውመዉጣትይችላሉ፡፡

ነገርግንበእውነትላይየተመሠረተናተገቢየሆነመረጃመስጠትዎለጥናቱስኬትከሚያበረክተውአስተዋጽኦባሻገርየስኳርታማሚለራሱስለሚያደርገውእንክብካቤመልክትማሻሻያይወላል፡፡

ጥያቄውንለመመላትሰላሳደቂቃያህልሊወስድይችላል፡፡

ስለዚህበጥናቱላይበመሳተፍዎለሚጠየቁትበመጨረሻምለሚሰጡትለየትኛውምአይነትምላሽአመሰግናለሁ፡፡

መጠየቅየምትፈልጉትነገርካለ፡መሀመድጀማል(የጥናቱባለቤት)
ስልክቁጥር :0977203888
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ይህንጥናትየተከታተሉት

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ወ/ሮ ደመ·ማአምዲሳ፡ ስልክ፡+251913754330 ኢሜል፡amdisademuma@gmail.com

ፈቃደኛነኝአዎእሳተፋለሁፊርማ__----------_ቀን ----------

_____

ፈቃደኛአይደለሁምአልሳተፍምፊርማ----------_ቀን----------

_____

መረጃሰብሳቢስም----------ፊርማ----------ቀን----------

_____

ክፍል 1፡ማህበራዊ አናግለሰባዊመግለጫ

መመሪያ 1፡ከዚህበታችላሉትጥያዎቼችአንዱንምርጫአክብብወይምበተሰጠህባዶቦታሙላ፡፡

ቁ	ጥያቄ	መልስ	
ማ 001	እድሜ	_____	
ማ 002	ፆታ	ወንድ ሴት	
ማ 003	የጋብቻሁኔታ	ያላገባ/ች ያገባ/ች የፈታ/ች የሞተበት/ባት	
ማ 004	ሃይማኖት	ሙስሊም ኦርቶዶክስ ጴንጤ ካቶሊክ ሌላ_____	
ማ 005	ብሄር	ኦሮሞ አምሃራ ጉራጌ ከፋ ዳውሮ ሌላ_____	

ማ 006	የትምህርትደረጃ	ማንበብአናመፃፍማይችል የጨረስክወከፍል_____	
ማ 007	የወርሃዊገቢ	_____	
ማ 008	በአቅራቢያካለጤናተቋምያለህርቀትበኪሜ	_____	
ማ 009	ስራህምንድንነው	ገበሬ ነጋዴ የቤትእምቤት የመንግስትሰራተኛ ሌላ_____	
ማ 010	የስኳርህመምበህክምናከተገኘብህምንያህልጊዜሆነህ	_____	
ማ 011	ህክምናላይምንያህልጊዜቆየህ	_____	
ማ 012	የትኛውየስኳርህመምነውያለብህ	አንደኛውአይነትየስኳርህመም ሁለተኛውአይነትየስኳርህመም	

ክፍል 2፥በተወሳሰበየስኳርበሽታየመያዝእድልእናየህመሙከባድነትምልከታ

ትዕዛዝ2: አሁንበተወሳሰበየስኳርበሽታየመያዝእድልእናየህመሙከባድነትላይያለህንአመለካከትልጠይቅህነው
{መልሱንአንብበእናመልስበተሰጠውቦታ‘√”አድርግ

በአበጣምአልስማማም

አአልስማማም

አልወሰንኩም

እእስማማለሁ

በእበጣምእስማማለሁ

ቁ	ጥያቄ	መልስ

		በአ	አ	ኣልወሰንኩም	እ	በእ
		1	2	3	4	5
በተወሳሰበየስኳርበሽታየመያዝእድልምልከታ						
ም 001	የስኳርህመምትኖበመሆኔበ(ኩላሊት፣ልብ፣ደምግፊት) በሽታልያዝአችላለሁ					
ም 002	የስኳርህመምትኖበመሆኔከጊዜበኋላ (ኩላሊት፣ልብ፣ደምግፊት) ይይዘኛል					
ም 003	የስኳርህመምትኖበመሆኔበአግርቁሰል/ጋንግሪንየመያዝአድልአለኝ					
ም 004	የስኳርህመምትኖበመሆኔበደምውስጥያለየስኳርመጠንማነስሊያጋጥመኝይችላል					
የተወሳሰበየስኳርበሽታህመምከባድነትምልከታ						
ም 005	በ(ኩላሊት፣ልብ፣ደምግፊት)በሽታመያዝለስኳርህመምትኖህይወትያሰጋል					
ም 006	በ(ኩላሊት፣ልብ፣ደምግፊት)በሽታመያዝለስኳርህመምትኖህይወትያሰጋል					
ም 007	በአግርቁስል/ጋንግሪንመያዝየስኳርህመምትኖነአካለጎዶሎየደርጋል					
ም 008	በደምውስጥያለየስኳርመጠንማነስበስኳርህመምተኛላይድንገተኛሞትሊያስከትልይችላል					

ክፍል፡3 የስኳርህመምተኛለራሱስለሚያደርገውእንክብካቤቀላልመሆንእናየመከላከልአቅምንምልከታ

ትዕዛዝ 3:
አሁንየስኳርህመምተኛለራሱስለሚያደርገውእንክብካቤቀላልመሆንእናየመከላከልአቅምንበተመለከተያለህንአመለካከትልጠይቅህነው {መልሱንአንብበእናመልስበተሰጠውቦታ‘√”አድርግ

ቁ	ጥያቄ	**መልስ**				
		በአ	**አ**	**ኣልወሰንኩም**	**እ**	**በእ**
		1	**2**	**3**	**4**	**5**
የስኳርህመምተኛለራሱስለሚያደርገውእንክብካቤይተውሳሰበየስኳርህመምንየመከላከልአቅምንምልከታ						
እ 001	**ለስኳርህመምትኖመደበኛየሆነ የ አካልእንቀሰቃሴበቀንለሰላሳደቂቃማድረግ በ(ኩላሊት፣ልብ፣እናደምግፊት) በሽታከመያዝይከላከላል**					
እ 00	**ለስኳርህመምትኖ፣አትክልትናፍራፍሬመመገብ በ(ኩላሊት፣ልብ፣እናደምግፊት) በሽታከመያዝይከላከላል**					
እ 003	**ስኳርህመምትኖበመደበኛነትየራስንየግሉኮስመጠንመለካትበደምውስጥስኳርበማነስየሚያጋትመውንድንገተኛሞትይከላከላል**					
እ 004	**ለስኳርህመምትኖእግርንመንከባከብየአካል መጉደልንይከላከላል**					
የስኳርህመምተኛለራሱስለሚያደርገውእንክብካቤቀላልመሆንምልከታ						

እ 005	እንደስኳርታማሚነቴመደበኛየሆነ የአካልብቃትእንቀሰቃሴበቀንለሰላሳደቂቃበማድረግ የ(ኩላሊት፣ልብ፣እናደምግፊት) በሽታንመከላከልለኔቀላልነው					
እ 006	እንደስኳርታማሚነቴ ፣አትክልትናፍራፍሬንበመመገብ የ(ኩላሊት፣ ለብ፣እናደምግፊት) በሽታንመከላከልእችላለሁ					
እ 007	እንደስኳርታማሚነቴበመደበኛነትየራሴንየግሉኮስመጠንበመለካትበደም ውስጥስኳርበማነስየሚያጋጥመውንድንገተኛሞትለመከላከልበራሴእትማ መናለሁ					
እ 008	እንደስኳርታማሚነቴእግሬንበመንከባከብየአካልመጉደልንመከላከልለኔቅ ላልነው					

ክፍል 4 ስለተወሳሰበስኳርህመምእናየስኳርህመምተኛለራሱየሚያደርገውንእንክብካቤእነደታስብየሚያደርጉዳዮች

ትዕዛዝ 4: አሁንስለተወሳሰበስኳርህመምእናየስኳርህመምተኛለራሱየሚያደርገውንእንክብካቤእንድታስብስለሚያደርጉነገሮችልጠይቅህነው {መልሱንአንብበእናመልስበተሰጠውቦታ‘√”አድርግ

ቁ	ጥያቄ	አዎ	አይደለም
ሚ001	ከቤተሰብአባልውስጥየተወሳሰበስኳርህመምየያዘውአለ		
ሚ002	ባለፈውአንድወርውስጥበታዘዘውመሰረትስኳርህመምተኛለራሱየሚያደርገውንእንክብካቤሚያደርግሰውአ ይተህወይምሰምተህታውቃለህ		
ሚ003	ባለፈውአንድወርውስጥበተወሳሰበስኳርህመምየተያዘውሰውአይተህ /ሰምተህታውቃለህ		
ሚ004	ባለፈውአንድወርውስጥስለስኳርህመምተኛለራሱስለሚያደርገውንእንክብካቤበሚዲያሰምተህታውቃለህ		

ክፍል 5፡የስኳርህመምእውቀትበተመለከተ

ትዕዛዝ5: አሁንስለስኳርህመምያልህንእውቀትልጠይቅህነው {መልሱንአንብብእናመልስበተሰጠውቦታ‘√”አድርግ

ቁ	ጥያቄ	መልስ		እለፍ
እ 001	ስኳርበሽታየህይወትዘመን (የረዥምጊዜ) በሽታነው	አዎ	እይደለም	
እ 002	ስኳርበሽታየሚድንበሽታነው	አዎ	እይደለም	
እ 004	የስኳርበሽታንበምንአይነትመንገድማከምይቻላል	1, በምግብ 2, በአካልብቃትእንቅስቃሴ በደምውስጥያለየግሉኮስመጥንንበመለካት አላውቅም ሌላ		
እ 005	የስኳርበሽታምልክትየሆነውንምረጥ	1. በጣምመራብ 2. በጣምመጠማት. 3. ሽንትቶሎቶሎመምጣት 4. መድከም አላውቅም 6. ሌላ _____		
እ 006	የተወሳሰበየስኳርህመምየሆነውንምረጥ **ትዕዛዝ:ምርጫዎቹንአታንብብ ,** **የመለሰውንከሞላህበኋላየቀረነገርካለእንዲገልጽአንድተጨማሪእድልስጠው**	በደምውስጥየስኳርመጠንማነስ የእግርቁስል /ጋንግሪን የነርቭህመም የአይንህመም የልብህመም የኩላሊትህመም የደምግፊት አላውቅም ሌላ		

ክፍል 6: የስኳርህመምተኛለራሱስለሚያደርገውእንክብካቤመልክትስለመስማትእናማስታወስ

ትዕዛዝ
6:አሁንየስኳርህመምተኛለራሱስለሚያደርገውእንክብካቤመልክትስለመስማትእናማስታወስልጠይቅህነው{መልሱንአንብብእናመልስበተሰጠውቦታ‘√”አድርግ

M 001	ባለፉትስድስትወራትየስኳርህመምተኛለራሱስለሚያደርገውእንክብካቤሰምተህታውቃለህ	አዎ አይደለም

M002	የስኳርህመምተኛለራሱስለሚያደርገውእንክብካቤመረጃከየትነውያገኘህው **ትዕዛዝ:ምርጫዎቹንአታንብብ ,** **የመለሰውንከሞላህበኋላየቀረነገርካለእንዲገልጽአንድተጨማሪእድልስጠው**	ጤናተቋም 2 ሃይማኖተቋም ጓደኞች ወላጅ/ሚስት ቴሌቪዥን ራዲዮ ፖስተር ሊፍሌት/ብሮሸር ሌላ
M003	የስኳርህመምተኛለራሱስለሚያደርገውእንክብካቤለመስማት/ለማየትየትኛውንታስቀድማለህ **ትዕዛዝ:ምርጫዎቹንአታንብብ ,** **የመለሰውንከሞላህበኋላየቀረነገርካለእንዲገልጽአንድተጨማሪእድልስጠው**	ቴሌቪዥን ራዲዮ ከጓደኛመመካከር ሊፍሌት/ብሮሸር ሌላ
M004	የስኳርህመምተኛለራሱስለሚያደርገውእንክብካቤበተደጋጋሚየሰማህውመልክት **ትዕዛዝ:** **ምርጫዎቹንአታንብብ,የመለሰውንከሞላህበኋላየቀረነገርካለእንዲገልጽአንድተጨማሪእድልስጠው**	ስለአምጋገብ መደበኛየሆነየአካልብቃትእንቅስቃሴማድረግ እግርመንከባከብ በደምውስጥያለግሉኮስንበራስመለካት
M006	የስኳርህመምተኛለራሱስለሚያደርገውእንክብካቤበምንአይነትመንገድሚተላለፈውንት መርጣለህ	አስቂኝ/ድራማ በእውነትላይየተመሰረተ

ክፍል 6: የስኳርህመምተኛለራሱስለሚያደርገውእንክብካቤ

ትዕዛዝ

6፡አሁንየስኳርህመምተኛባለፈውሳምንትለራሱስለሚያደርገውእንክብካቤልጠይቅህነው{መልሱንአንብብእናመልስበተሰጠውቦታ‘√”አድርግ

ቁ	ጥያቄ	መልስ							
		0	1	2	3	4	5	6	7
ራ 001	ባለፈውሳምንትለምንያህልቀንጤናማየአምጋገብስርዐትተከተልክ								
ራ 002	በአማካይባለፈውወርበሳምንትለምንያህልቀንየአመጋገብእቅድህንተከተልክ								
ራ 003	ባለፈውሳምንትለምንያህልቀንአትክልትእናፍራፍሬከሶስትጊዜበላይተምገብክ								
ራ 004	ባለፈውሳምንትለምንያህልቀንከፍተኛስብያለውምግብተመገብክ(ለምሳሌእንደቀይስጋ?								
ራ 005	ባለፈውሳምንትለምንያህልቀንመደበኛየሆነበቀንቢያንስለሰላሳደቂቃየአካልብቃትእንቅስቃሴበ ማድረግላይተሳተፍክ (የእርምጃንይጨምራል)								
ራ 006	ባለፈውሳምንትለምንያህልቀንከስራእናከቤትስራውጪ (ዋናበመዋኘትበእርምጃ /ብስክሌትበመንዳት) ተሳተፍክ								
ራ 007	ባለፈውሳምንትለምንያህልቀንበደምውስጥያለግሉኮስንበራስህለካህ								
ራ008	ባለፈውሳምንትለምንያህልቀንበደምህውስጥያለየግሉኮስመጠንሃኪምባዘዘህመሰረትበራስህለ ካህ								
ራ 009	ባለፈውሳምንትለምንያህልቀንእግርህንተመለከትክ?								
ራ 010	ባለፈውሳምንትለምንያህልቀንጫማህውስጡንተመለከትክ?								

ክፍል 7፡ላለማሰብመሞከር

ኣሁንስለየተወሳሰበየስኳርህመምኣለማሰብመሞከርጋርተያይዞልጠይቅህነው{መልሱንአንብብእናመልስበተሰጠውቦታ‘√”አድርግ

ቁ	ጥያቄ	**መልስ**				
		በአ	**አ**	**አልወሰንኩም**	**እ**	**በእ**
		1	**2**	**3**	**4**	**5**
አ 001	የተወሳሰበየስኳርበሽታሊይዘኝእንደሚችልማሰብአልፈልግም					
አ 002	የተወሳሰበየስኳርበሽታንለመከላከልምንምማድረግአልፈልግም					
አ 003	ከተወሳሰበየስኳርበሽታእራሴንመጠበቅአልፈልግም					
አ 004	ስለተወሳሰበየስኳርበሽታበጭራሽማሰብአልፈልግም					

DECLARATION

I declare that this research thesis report entitled "Characterization of Perceptions toward Diabetes Mellitus and Self-Care Practice among Diabetes Mellitus Patients Visiting Jimma University Medical Center: Application of Extended Parallel Process Model" is my own work that it hasn't been addressed in study area as far as my knowledge touched and all resources I used has been indicated and acknowledged as complete reference. I understand that non-adherence to the principles of academic honesty and integrity, misconceptions/fabrications of any idea/data/source will constitute sufficient ground for disciplinary action by the University and also evoke penal action from the sources which have not been properly cited or acknowledged.

Name of student_____ Signature _____Date _____

APPROVAL SHEET

As thesis research advisor, I hereby certify that I have read and evaluated this thesis report prepared under my guidance by Mohammed Jemal entitled "Characterization of Perceptions toward Diabetes Mellitus and Self-Care Practice among Diabetes Mellitus Patients Visiting Jimma University Medical Center: Application of Extended Parallel Process Model". I recommended that the report be submitted for implementation and further action as fulfilling the thesis requirement.

Name: Mohammed Jemal

Signature: _____

1. Name of major advisor: Mr. YohannesKebede (MPH, Associate Professor)
   Signature _____ Date _____

2. Name of co-advisor: Mrs. DemumaAmdisa(MPH, Lecturer)
   Signature _____ Date _____

As member of the board of examiners of the MPH thesis report open defense, we certified that we have read and evaluated the thesis report prepared by Mohammed Jemal and examined the candidates report. We recommend that the report be accepted for implementation and further actions as fulfilling the thesis requirements for the degree of Master of Public Health in Health Promotion and Health Behavior.

Examiner_____ Signature_____Date _____